

WHAT IS CLAIMED IS:

1. A wireless automatically-activated hand-supportable bar code symbol reading system with automatic range-dependent data transmission control.

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2. A wireless automatically-activated laser scanning bar code symbol reading system employing a 2-way RF-based data communication link between its cradle-providing base station and its wireless hand-supportable code symbol reading device employing a manually-operated data transmission activation switch that is controlled by automatically detecting whether or not the hand-supportable wireless device is located within the RF communication range of the RF-based data communication link.

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3. A wireless automatically-activated laser scanning bar code symbol reading system, wherein the range-dependent condition is detected by detecting the strength of "heartbeat" signals automatically transmitted from the base station to the wireless hand-supportable device.

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4. A wireless laser scanning bar code symbol reading system, wherein if the hand-supportable scanning device is located out-side of the predetermined 2-way RF communication range, then an audible and/or visual indicator is generated and packaged symbol character data is automatically buffered within the memory storage of device until the device moves into its communication range at a later time, during the next requested data transmission to the host computer system.

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5. A wireless automatically-activated laser scanning bar code symbol reading system, wherein wireless reader is programmed to require the user to press the data transmission activation button another time to transmit the barcode after it has just established a new communication link with its base station.

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6. A wireless automatically-activated laser scanning bar code symbol reading system, wherein its system control process is programmed to enables multiple reads to be stored before data

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transmission is to occur to the base station after depressing the data transmission activation switch.

5 7. A wireless laser scanning bar code symbol reading system, wherein a control system is programmed so that LEDs illuminate to indicate that wireless reader is out of range, as well as so that LEDs illuminate to indicate that there is stored data in a Data Packet Group Buffer waiting to be transmitted to a base station by way of a wireless RF communication link.

10 8. A wireless laser scanning bar code symbol reading system, wherein a control system is programmed so that stored data can be cleared by holding down a data transmission activation switch for a programmed duration (i.e. 3 sec.).

15 9. A wireless laser scanning bar code symbol reading system, wherein a control system is programmed so that it tests its data communication link before transmission of data packets buffered in memory to a base station by way of a wireless RF communication link.

20 10. A wireless laser scanning bar code symbol reading system, wherein a mechanical vibrator is provided within the hand-supportable housing of the wireless device so that when scan data transmission from the reader to the base station is successful, then the reader automatically vibrates.

25 11. A wireless laser scanning bar code symbol reading system, wherein a low battery protection circuit is provided within a wireless hand-supportable reader for (i) automatically monitoring battery voltage; (ii) razzing/vibrating the reader if the battery voltage is low, and turning off laser diode within the device, and causing the system to enter its sleep mode.

30 12. A wireless automatically-activated laser scanning bar code symbol reading system, wherein a RF transceiver chip set and associated microcontrollers are provided aboard a wireless reader and a base station so that they are automatically driven into a low power mode when the data communication link between the wireless reader and its base station is disconnected or terminated.

13. The wireless laser scanning bar code symbol reading system of claim 12, wherein when the wireless reader is woken up, said microcontrollers are also woken up at the same time, and the RF transceivers automatically activated and the communication link reestablished.

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14. A wireless laser scanning bar code symbol reading system, wherein a system power switch is located at the rear end of reader's housing, and accessible by way of a small pin hole.

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15. A wireless laser scanning bar code symbol reading system, wherein the cradle portion of a base station is provided with protractable/retractable support hooks for supporting the hand-held reader in both vertical and horizontal orientations.

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16. A wireless laser scanning bar code symbol reading system, wherein the firmware of wireless bar code reader is updated by a host computer.

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17. A wireless automatically-activated laser scanning bar code symbol reading system, capable of reading 2-D bar code symbologies, and having a manually-activated data transmission switch whose effective operation is conditioned by means for providing automatic range-dependent data transmission control.

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18. A wireless laser bar code symbol reading system, comprising:
a wireless hand-supportable bar code symbol reader in two-way RF communication with a base station operably connected to a host system, by way of an RF-based wireless data communication link over which two-way communication of data packets can occur in a reliable manner,

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wherein said wireless hand-supportable bar code reader has an operational mode and a sleep mode, and further includes
(1) a hand-supportable housing;
(2) a laser-scanning bar code symbol reading mechanism, including a laser diode source, disposed in said hand-supportable housing, for automatically producing a visible laser scanning

pattern, reading a bar code symbol on an object using said visible laser scanning pattern, and producing a symbol character data string representative of said read bar code symbol;

5 (3) a first RF-based transceiver circuit, disposed in said hand-supportable housing, for transmitting data packets corresponding to said produced symbol character data string, over said RF-based wireless data communication link, to said base station for subsequent transmission to said host system;

10 (4) a battery device for producing a voltage for use in driving electrical components contained within said hand-supportable housing;

15 (5) a low battery condition detection circuit disposed within said hand-supportable housing, for automatically monitoring the voltage state of said battery device and generating a control signal upon automatic detection of a low voltage state in said battery device;

20 (6) a low battery-voltage alarm device disposed within said hand-supportable housing, for producing a low-voltage alarm signal in response to the generation of said control signal; and

25 (7) a device controller, disposed within said hand-supportable housing, for automatically driving said wireless hand-supportable bar code reader into said operational state by activating said laser scanning bar code symbol reading mechanism and said first RF-based transceiver circuit when not receiving said control signal, and for automatically driving said wireless hand-supportable bar code reader into said sleep state by deactivating said laser diode and said first RF transceiver circuit when receiving said control signal.

19. The wireless laser scanning bar code symbol reading system of claim 93, wherein said base station includes

25 (1) a base station housing, and

20 (2) a second RF-based transceiver circuit, disposed within said base station housing, for receiving the data packets corresponding to said symbol character data string transmitted over said RF-based wireless data communication link, from said first RF-based transceiver circuit.

30 20. An automatically-activated wireless bar code symbol reading system for use in a work environment and having an operational mode and a sleep mode, said system comprising:

5 (A) a wireless hand-supportable bar code symbol reader in two-way RF communication with a base station operably connected to a host system, by way of an RF-based wireless data communication link having a predetermined RF communication range over which two-way communication of data packets can occur, said wireless hand-supportable bar code reader including

10 (1) a hand-supportable housing,
(2) a battery disposed within said hand-supportable housing, for supplying electrical power to electrical-energy consuming components employed therewithin.

15 (3) a bar code symbol reading mechanism, disposed in said hand-supportable housing, for automatically and automatically reading a bar code symbol on an object and producing a symbol character data string representative of said read bar code symbol,

20 (4) a first RF-based transceiver chipset, disposed in said hand-supportable housing, for transmitting data packets corresponding to said produced symbol character data string, to said base station and for subsequent transmission to said host system, and

25 (5) a first microcontroller, operably associated with said first RF-based transceiver chipset, for controlling the operation of said wireless hand-supportable bar code symbol reader; and

30 (B) said base station installable within a work environment and including

(1) a base station housing,

(2) a second RF-based transceiver chipset, disposed within said base station housing, for receiving data packets corresponding to said symbol character data strings transmitted from said first RF-based transceiver chipset, and

25 (3) a second microcontroller, operably associated with said second RF-based transceiver chipset, for controlling the operation of said base station;

wherein said first and second RF-based transceiver chipsets enable said RF-based wireless data communication link between said wireless hand-supportable bar code reader and said base station;

30 wherein said first and second RF-based transceiver chipsets cooperate to enable the communication of data packets over said RF-based wireless data communication link, during said operational mode;

wherein said second RF-based transceiver includes means for automatically generating and transmitting a reference signal to said first RF-based transceiver circuit over said RF-based wireless data communication link;

5 wherein said first RF-based transceiver circuit includes means for automatically receiving said reference signal and detecting the strength of said reference signal; and

wherein, when said system enters said sleep mode, then said first and second RF-based chipsets and said first and second microcontrollers associated therewith are automatically deactivated and said RF data communication link is terminated to conserve said electrical power within said wireless hand-supportable bar code reader, and

10 wherein, when said system re-enters its operational mode, then said first and second RF chipsets and said first and second microcontrollers associated therewith are automatically reactivated and said RF data communication link is re-established to resume communication between said wireless hand-supportable bar code symbol reader and said base station.

15 21. The automatically-activated wireless laser scanning bar code symbol reading system of claim 20, wherein said wireless hand-supportable bar code symbol reader further comprises a battery power level detection circuit for automatically detecting the available electrical power remaining within said wireless hand-supportable bar code symbol reader, and when said power level is detected as falling below a predetermined threshold, automatically generating a control signal which causes said system to enter said sleep mode.

20 22. The automatically-activated wireless laser scanning bar code symbol reading system of claim 21, wherein said wireless hand-supportable bar code symbol reader further comprises a manually-actuatable switch disposed on said hand-supportable housing for causing said system to exit said sleep mode and re-enter said operational mode.

25 23. The automatically-activated wireless laser scanning bar code symbol reading system of claim 20, wherein said base station further comprises: a cradle portion adapted for receiving said hand-supportable housing.

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24. The automatically-activated wireless laser scanning bar code symbol reading system of claim 20, wherein said reference signal is a heartbeat-type signal generated from said second RF-based transceiver circuit.

5 25. The automatically-activated wireless laser scanning bar code symbol reading system of claim 20, which further comprises an indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said laser-scanning bar code symbol reading mechanism and a symbol character data string representative thereof is produced.

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26. The automatically-activated wireless laser scanning bar code symbol reading system of claim 20, which further comprises an objection detection subsystem disposed within said hand-supportable housing and including infrared (IR) signal transmission/receiving circuitry for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

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27. The automatically-activated wireless laser scanning bar code symbol reading system of claim 20, which further comprises an objection detection subsystem disposed within said hand-supportable housing, and including low-power non-visible laser beam signaling mechanism for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

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28. An wireless automatically-activated bar code symbol reading system for use in a work environment, said system comprising:

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(A) a wireless hand-supportable bar code symbol reader in two-way RF communication with a base station operably connected to a host system, by way of an RF-based wireless data communication link having a predetermined RF communication range over which two-way communication of data packets can occur in a reliable manner, said wireless hand-supportable bar code reader symbol including

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(1) a hand-supportable housing;

(2) a bar code symbol reading mechanism, disposed in said hand-supportable housing, for automatically reading a bar code symbol on an object within a first predetermined time period, and each instant said bar code symbol is read within said first predetermined time period, automatically producing a symbol character data string representative of said read bar code symbol;

(3) a first RF-based transceiver circuit, disposed in said hand-supportable housing, for transmitting to said base station groups of data packets associated with one or more of said produced symbol character data strings;

(4) a data packet group buffer, disposed in said hand-supportable housing, for buffering one or more groups of data packets associated with symbol character data strings produced in response to the reading of bar code symbols by said bar code symbol reading mechanism;

(5) a data transmission circuit, disposed in said hand-supportable housing, for transmitting a selected one of said produced symbol character data strings to either said first RF transceiver circuit or said data packet group buffer;

(6) a manually-operated data transmission activation switch, integrated with said hand-supportable housing, for generating a data transmission control activation signal in response to the activation of said manually-activatable data transmission switch within said first first predetermined time period; and

(7) a device controller, disposed within said hand-supportable housing, for controlling the operation of said wireless hand-supportable bar code symbol reader and said first RF-based transceiver circuit; and

(B) said base station installable within a work environment and including

(1) a base station housing,

(2) a second RF-based transceiver circuit, disposed within said base station housing, for receiving groups of data packets corresponding to the symbol character data strings transmitted from said first RF-based transceiver circuit, and

(3) a base station controller mounted in said base station housing, for controlling the operation of said base station;

wherein said first and second RF-based transceiver circuits enable a RF-based wireless data communication link between said wireless hand-supportable bar code reader and said base station;

5 wherein said first and second RF-based transceiver circuits cooperate to enable the communication of data packets between said wireless hand-supportable bar code symbol reader and said base station, over said RF-based wireless data communication link;

wherein said second RF-based transceiver includes means for automatically generating and transmitting a reference signal to said first RF-based transceiver circuit over said RF-based wireless data communication link;

10 wherein said first RF-based transceiver circuit includes means for automatically receiving said reference signal and detecting the strength of said reference signal;

wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and thereupon to automatically transmit to said first RF-based transceiver, the symbol character data string produced at substantially the same time when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range; and

20 wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and thereupon to automatically collect and store in said data packet group buffer, the symbol character data string produced at substantially the same time when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range.

25 29. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said wireless hand-supportable bar code reader further comprises an out-of-communication range indicator, integrated with said hand-supportable housing, for generating an audible and/or visual signal indicative that said wireless hand-supportable bar code symbol reader is located outside said predetermined RF communication range;

wherein said device controller for controls said data transmission circuit, said data packet group buffer and said out-of-communication range indicator.

5 30. The wireless automatically-activated bar code symbol reading system of claim 29, wherein said device controller is further programmed to cause said out-of-communication range indicator to automatically generate audible and/or visual signal when said wireless hand-supportable bar code symbol reader is detected as being located outside of said predetermined RF communication range based on measuring the strength of said detected reference signal.

10 31. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said base station further comprises: a cradle portion adapted for receiving said hand-supportable housing.

15 32. The wireless automatically-activated bar code symbol reading system of claim 31, wherein said cradle includes a radio antenna.

33. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said data packet group buffer is realized as a memory chip installed aboard said hand-supportable housing.

20 34. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said reference signal is a heartbeat-type signal generated from said second RF-based transceiver circuit.

25 35. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said first RF-based transceiver circuit and said device controller are realized as first RF-based chipset disposed within said hand-supportable housing.

30 36. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said second RF-based transceiver circuit and said base station controller are realized as second RF-based chipset disposed within said base station housing.

37. The wireless automatically-activated bar code symbol reading system of claim 28, which further comprises a good read indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said bar code symbol reading mechanism and a symbol character data string representative thereof is produced.

38. The wireless automatically-activated bar code symbol reading system of claim 28, which further comprises an objection detection subsystem disposed within said hand-supportable housing and including infrared (IR) signal transmission/receiving circuitry for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

39. The wireless automatically-activated bar code symbol reading system of claim 28, which further comprises an objection detection subsystem disposed within said hand-supportable housing, and including low-power non-visible laser beam signaling mechanism for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

40. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said device controller is further programmed so that said device controller automatically tests said RF-based wireless data communication link prior to transmitting symbol character data, stored in said data packet group buffer, to said first RF-based transceiver circuit when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is once again located inside of said predetermined RF communication range.

41. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said wireless bar code symbol reader further comprises three LEDs integrated with said hand-supportable housing, and wherein said device controller is programmed so that said three LEDs are illuminated to indicate that said wireless reader is located outside of said predetermined RF communication range out of range.

5 42. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said wireless hand-supportable bar code symbol reader further comprises three LEDs integrated with said hand-supportable housing, and wherein said device controller is programmed so that said three LEDs are illuminated to indicate that symbol character data is stored in said data packet group buffer waiting to be transmitted to said base station by way of said RF-based wireless data communication link.

10 43. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said device controller is programmed so that symbol character data stored within said data packet group buffer can be cleared by holding down said manually-operated data transmission activation switch for a second predetermined time duration.

15 44. The wireless automatically-activated bar code symbol reading system of claim 28, wherein said bar code symbol reading mechanism comprises a laser scanning bar code symbol reading mechanism capable of producing a visible laser scanning pattern for automatically reading a bar code symbol on an object within a first predetermined time period, and each instant said bar code symbol is read by said visible laser scanning pattern within said first predetermined time period, automatically producing a symbol character data string representative of said read bar code symbol.

20 45. An automatically-activated laser scanning 2D bar code symbol reading system for use in a work environment, said system comprising:

25 a hand-supportable 2D bar code symbol reader in communication with a host system, and having a bar code reading mode of operation and a data transmission mode of operation, and including

30 (1) a hand-supportable housing;

 (2) an automatically-activated laser scanning 2-D bar code symbol reading mechanism, disposed in said hand-supportable housing, for automatically (1) producing, during said bar code reading mode of operation, a visible linear-type laser scanning pattern for scanning a 2D bar code symbol structure on an object as said hand-supportable housing is

manually transported past said 2D bar code symbol along a height-wise direction by an operator, (2) capturing lines of scan data from said scanned 2D bar code symbol structure, (3) decode processing said scan data, and (4) generating a symbol character data string representative of said read 2-D bar code symbol;

5 wherein said laser scanning 2-D bar code symbol reading mechanism includes

(a) a bar code symbol data detector for automatically detecting each line of said 2-D bar code symbol during said bar code reading mode of operation, and automatically producing a line of scan data for buffering in a buffer memory, and

10 (b) an audible data capture buffering indicator for automatically generating audible sounds as each line of bar code symbol data is captured and buffered in said buffer memory, and

15 (c) a decode processor for automatically decode automatically processing an entire set of scan data collected in said buffer memory and corresponding to a scanned 2-D bar code symbol, and generating a symbol character data string representative of said read 2-D bar code symbol;

(3) a data transmission circuit, disposed in said hand-supportable housing, for transmitting said produced symbol character data string to a host system; and

20 (4) a device controller, disposed within said hand-supportable housing, for controlling said automatically-activated laser scanning 2-D bar code symbol reading mechanism and said data transmission circuit.

25 46. The automatically-activated laser scanning bar code symbol reading system of claim 45, which further comprises a good read indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said laser-scanning bar code symbol reading mechanism and a symbol character data string representative thereof is produced.

30 47. The automatically-activated laser scanning bar code symbol reading system of claim 45, which further comprises an objection detection subsystem disposed within said hand-supportable housing and including infrared (IR) signal transmission/receiving circuitry for

automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

48. The automatically-activated laser scanning bar code symbol reading system of claim 45, which further comprises an objection detection subsystem disposed within said hand-supportable housing, and including low-power non-visible laser beam signaling mechanism for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

10 49. An automatically-activated laser scanning 2D bar code symbol reading system for use in a work environment, said system comprising:

15 (A) a hand-supportable 2D bar code symbol reader in two-way communication with a base station operably connected to a host system, and having a bar code reading mode of operation and a data transmission mode of operation, said hand-supportable 2D bar code symbol reader including

20 (1) a hand-supportable housing;

25 (2) an automatically-activated laser scanning 2-D bar code symbol reading mechanism, disposed in said hand-supportable housing, for automatically (a) producing, during said bar code reading mode of operation, a visible linear-type laser scanning pattern for scanning a 2D bar code symbol structure on an object as said hand-supportable housing is manually transported past said 2D bar code symbol along a height-wise direction by an operator, (b) capturing lines of scan data from said scanned 2D bar code symbol structure, (c) decode processing said scan data, and (d) generating a symbol character data string representative of said read 2-D bar code symbol;

30 wherein said laser scanning 2-D bar code symbol reading mechanism includes

(i) a bar code symbol data detector for automatically detecting each line of said 2-D bar code symbol during said bar code reading mode of operation, and producing a line of scan data for buffering in a buffer memory, and

(ii) an audible data capture buffering indicator for automatically generating audible sounds as each line of bar code symbol data is captured and buffered in said buffer memory, and

5 (iii) a decode processor for automatically decode processing an entire set of scan data collected in said buffer memory and corresponding to a scanned 2-D bar code symbol, and generating a symbol character data string representative of said read 2-D bar code symbol;

10 (3) a data transmission circuit, disposed in said hand-supportable housing, for transmitting said produced symbol character data string to said host system during said data transmission mode of operation;

15 (4) a manually-operated data transmission activation switch, integrated with said hand-supportable housing, for generating a data transmission control activation signal in response to the actuation of said manually-operated data transmission switch during said bar code reading mode of operation; and

20 (5) a device controller, disposed within said hand-supportable housing, for controlling said automatically-activated laser scanning 2-D bar code symbol reading mechanism and said data transmission circuit so that the symbol character data string, produced during the bar code reading mode of operation when said data transmission control activation signal is generated, is transmitted to said host system.

25 50. The wireless automatically-activated laser scanning bar code symbol reading system of claim 49, which further comprises a good read indicator, integrated with said hand-supportable housing, for indicating each instance of when a 2-D bar code symbol structure is read by said automatically-activated laser scanning 2-D bar code symbol reading mechanism and a symbol character data string representative thereof is produced.

30 51. The wireless automatically-activated laser scanning bar code symbol reading system of claim 49, which further comprises an objection detection subsystem disposed within said hand-supportable housing and including infrared (IR) signal transmission/receiving circuitry for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

52. The wireless automatically-activated laser scanning bar code symbol reading system of claim 49, which further comprises an objection detection subsystem disposed within said hand-supportable housing, and including low-power non-visible laser beam signaling mechanism for

automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

5 53. An automatically-activated wireless laser scanning 2D bar code symbol reading system for use in a work environment, said system comprising:

10 (A) a wireless hand-supportable 2D bar code symbol reader in two-way RF communication with a base station operably connected to a host system, by way of an RF-based wireless data communication link having a predetermined RF communication range over which two-way communication of data packets can occur, said wireless hand-supportable bar code reader having a bar code reading mode of operation and a data transmission mode of operation, and including

15 (1) a hand-supportable housing;

20 (2) an automatically-activated laser scanning 2-D bar code symbol reading mechanism, disposed in said hand-supportable housing, for automatically (a) producing, during said bar code reading mode of operation, a visible linear-type laser scanning pattern for scanning a 2D bar code symbol structure on an object as said hand-supportable housing is manually transported past said 2D bar code symbol along a height-wise direction by an operator, (b) capturing lines of scan data from said scanned 2D bar code symbol structure, (c) decode processing said scan data, and (d) generating a symbol character data string representative of said read 2-D bar code symbol;

25 wherein said automatically-activated laser scanning 2-D bar code symbol reading mechanism includes

30 (i) a bar code symbol data detector for automatically detecting each line of said 2-D bar code symbol during said bar code reading mode of operation, and automatically producing a line of scan data for buffering in a buffer memory, and

(ii) an audible data capture buffering indicator for automatically generating audible sounds as each line of bar code symbol data is captured and buffered in said buffer memory, and

(iii) a decode processor for automatically decode automatically processing an entire set of scan data collected in said buffer memory and corresponding to a

scanned 2-D bar code symbol, and generating a symbol character data string representative of said read 2-D bar code symbol;

5 (3) a data packet group buffer, disposed in said hand-supportable housing, for buffering one or more groups of data packets associated with symbol character data strings produced by said automatically-activated laser-scanning 2-D bar code symbol reading mechanism;

10 (4) a first RF-based transceiver chipset, disposed in said hand-supportable housing, for transmitting to said base station, groups of data packets associated with one or more of said produced symbol character data strings;

15 (5) a device controller, disposed within said hand-supportable housing, for controlling said wireless hand-supportable 2D bar code symbol reader; and

16 (B) said base station installable within a work environment and including

17 (1) a base station housing, and

18 (2) a second RF-based transceiver chipset, disposed within said base station housing, for receiving groups of data packets associated with symbol character data strings transmitted from said first RF-based transceiver chipset;

20 wherein said first and second RF-based transceiver chipsets cooperate to enable the communication of data packets between said wireless hand-supportable bar code symbol reader and said base station, over said RF-based wireless data communication link;

25 wherein said second RF-based transceiver chipset comprises means for automatically generating and transmitting a reference signal to said first RF-based transceiver chipset over said RF-based wireless data communication link;

26 wherein said first RF-based transceiver chipset includes means for automatically receiving said reference signal and detecting the strength of said reference signal;

30 wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and thereupon to automatically transmit groups of data packets associated with one or more symbol character data strings, to said first RF-based transceiver chipset when said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range; and

wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and thereupon to automatically collect and store in said data packet group buffer, groups of data packets associated with one or more symbol character data strings, when said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range.--

10 54. The wireless automatically-activated laser scanning bar code symbol reading system of
claim 53, wherein said wireless hand-supportable bar code reader further comprises an out-of-
communication range indicator, integrated with said hand-supportable housing, for generating
an audible and/or visual signal indicative that said wireless hand-supportable bar code symbol
reader is located outside said predetermined RF communication range.

15 55. The wireless automatically-activated laser scanning bar code symbol reading system of
claim 54, wherein said device controller is further programmed to cause said out-of-
communication range indicator to automatically generate audible and/or visual signal when said
wireless hand-supportable bar code symbol reader is detected as being located outside of said
predetermined RF communication range based on measuring the strength of said detected
reference signal.

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56. The wireless automatically-activated laser scanning bar code symbol reading system of claim 53, wherein said base station further comprises a cradle portion adapted for receiving said hand-supportable housing.

25 57. The wireless automatically-activated laser scanning bar code symbol reading system of
claim 56, wherein said cradle includes a radio antenna

30 58. The wireless automatically-activated laser scanning bar code symbol reading system of
claim 53, wherein said data packet group buffer is realized as a memory chip installed aboard
said hand-supportable housing.

59. The wireless automatically-activated laser scanning bar code symbol reading system of claim 53, wherein said reference signal is a heartbeat-type signal generated from said second RF-based transceiver circuit.

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60. The wireless automatically-activated laser scanning bar code symbol reading system of claim 53, which further comprises a good read indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said automatically-activated laser-scanning bar code symbol reading mechanism and a symbol character data string representative thereof is produced.

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61. The wireless automatically-activated laser scanning bar code symbol reading system of claim 53, which further comprises an objection detection subsystem disposed within said hand-supportable housing and including infrared (IR) signal transmission/receiving circuitry for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

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62. The wireless automatically-activated laser scanning bar code symbol reading system of claim 53, which further comprises an objection detection subsystem disposed within said hand-supportable housing, and including low-power non-visible laser beam signaling mechanism for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.

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63. The wireless automatically-activated laser scanning bar code symbol reading system of claim 53, wherein said device controller is further programmed so that said device controller automatically tests said RF-based wireless data communication link prior to transmitting symbol character data, stored in said data packet group buffer, to said first RF-based transceiver chipset when a data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is once again located inside of said predetermined RF communication range.

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5 64. The wireless automatically-activated laser scanning bar code symbol reading system of claim 53, wherein said device controller is programmed so that symbol character data stored within said data packet group buffer is automatically cleared from said data packet group buffer when holding down a manually-operated data transmission activation switch for a second predetermined time duration.

10 65. An wireless bar code symbol reading system for use both vertical and horizontal orientations in a work environment, said system comprising:

15 (A) a wireless hand-supportable bar code symbol reading device in two-way RF communication with a base station operably connected to a host system, by way of an RF-based wireless data communication link over which two-way communication of data packets can occur, said wireless hand-supportable bar code reading device including a hand-supportable housing; and

20 (B) said base station installable within a work environment and including a base station housing having a cradle portion provided with a pair of hinged support hooks for supporting said hand-supportable housing of said reading device in both vertical and horizontal orientations in said work environment;

25 wherein said pair of hinged support hooks are arrangeable in a protracted position within said cradle portion so as to support said hand-supportable housing in said cradle portion mounted in a vertical orientation in said work environment; and

30 wherein said pair of hinged support hooks are arrangeable in a retracted position within said cradle portion so as to support said hand-supportable housing in said cradle portion mounted in a horizontal orientation in said work environment.

25 66. The wireless bar code symbol reading system of claim 65, wherein said wireless hand-supportable bar code reading device further includes:

30 a bar code symbol reading mechanism, disposed in said hand-supportable housing, for optically scanning and reading a bar code symbol on an object, and producing a symbol character data string representative of said read bar code symbol;

30 a first RF-based transceiver circuit, disposed in said hand-supportable housing, for transmitting to said base station, a group of data packets associated with said produced symbol

character data strings; and

5 a device controller, disposed within said hand-supportable housing, for controlling the operation of said wireless hand-supportable bar code symbol reading device.

67. The wireless bar code symbol reading system of claim 66, wherein said base station further includes:

10 a second RF-based transceiver circuit, disposed within said base station housing, for receiving said group of data packets transmitted from said first RF-based transceiver circuit, and

15 a base station controller mounted in said base station housing, for controlling the operation of said base station;

wherein said first and second RF-based transceiver circuits enable said RF-based wireless data communication link between said wireless hand-supportable bar code reading device and said base station; and

20 wherein said first and second RF-based transceiver circuits cooperate to enable the communication of data packets between said wireless hand-supportable bar code symbol reading device and said base station, over said RF-based wireless data communication link.

68. The wireless bar code symbol reading system of claim 65, wherein said cradle portion includes a radio antenna.

25 69. The wireless bar code symbol reading system of claim 98, wherein said first RF-based transceiver circuit and said device controller are realized as first RF-based chipset disposed within said hand-supportable housing.

70. The wireless bar code symbol reading system of claim 68, wherein said second RF-based transceiver circuit and said base station controller are realized as second RF-based chipset disposed within said base station housing.